

REMARKS

In the Office Action, claims 1-7 were objected to, and claims 8-18 were rejected. By the present response, the specification and claims 1-18 have been amended, and new claims 19 and 20 have been added. Upon entry of the amendments, claims 1-20 will be pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Objection to the Specification

The specification was objected to because of certain informalities. The objectionable paragraph has been replaced to obviate the objections raised in the Office Action. In particular, "difference beam 730" has been replaced by "complex baseband version of the sum beam 710". The replacement paragraph is believed to obviate the objection raised by the Examiner. Review and acceptance of the replacement paragraph are requested.

Claim objections due to informalities

In the Office Action, claims 1-7 were objected to, because of certain informalities. Claims 1 and 6 have been amended to obviate the objections raised in the Office Action. In particular, the term "generator" has been replaced by the term "source" in claim 1; the term "in" has been inserted in the phrase "is a first position" to read as "is in a first position" in claim 1; and the term "the" has been inserted in the phrase "receiving transmitter output" to read as "receiving the transmitter output" in claim 6. No new matter has been added. Thus reconsideration and allowance of amended claims is requested.

Rejections Under 35 U.S.C. § 102

Claim 8 and claims depending therefrom:

Claims 8, and 11-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Scott (U.S. Patent 5,959,980; hereinafter "Scott '980"). Claim 8 is clearly distinguishable from the teachings of Scott '980. In particular, Scott '980 does not teach, disclose or

suggest at least a “colored noise-like preamble”, as recited in claim 8. Instead, Scott ‘980 teaches transmitting a completely different type of preamble preceding a main data transmission for synchronization of spread spectrum communication signals.

As set forth in the application, it has been found that the use of a colored noise-like preamble provides for extremely straightforward and cost-effective short-range spread spectrum communications. The use of such techniques was unknown prior to the invention, and is certainly not disclosed in Scott ‘980.

In formulating the rejection, the Examiner stated simply that “Scott discloses a communication system where a transmitter 907 (Fig. 9) transmits a preamble 579 (Fig. 5C) and *is considered capable of transmitting a colored noise-like preamble*”. See Office Action, page 3, section 5 (emphasis added). The Examiner provided no basis whatsoever in the reference for the assumption. Absent *some* showing that Scott ‘980 system can produce such a preamble, the Examiner’s assumption simply cannot support a *prima facie* case of anticipation.

Scott ‘980 includes extensive teachings regarding the preamble used, its nature, and its protocol. Nowhere does the reference teach or even suggest the use of a colored noise-like preamble. In particular, as set forth in column 4, lines 60-64 of Scott ‘980, a preamble may be used for synchronization and power control:

The base station and user stations may precede their main data transmissions with a preamble, such as, for example, where desired for synchronization of spread spectrum communication signals or for conducting power control.

Furthermore, Scott ‘980 specifically teaches the contents of the preamble:

A base station and user stations may transmit a preamble prior to a time slot designated for a main data transmission, and may interleave the preamble in a designated time interval between two time other time slots.

The preamble may consist of multiple bursts, one burst from each a different antenna, to allow channel sounding at the target. Scott '980, column 5, lines 6-12.

Throughout the reference, such bursts are discussed, along with alternative embodiments for the preamble. In none of these is there mention of a colored noise-like preamble.

Because Scott '980 fails to teach, disclose or suggest colored noise-like preamble, it simply cannot support a *prima facie* case of anticipation of claim 8 or its dependent claims. Therefore, the present invention, as recited in independent claim 8 and its dependent claims are clearly patentable over Scott '980. Thus, it is respectfully requested that the rejection of claim 8 and its dependent claims under 35 U.S.C. §102(b) be withdrawn.

Claim 14 and claims depending therefrom:

Claims 14-16 were rejected under 35 U.S.C. § 102(e) as being anticipated by Scott (U.S. Patent 6,141,373; hereinafter "Scott '373"). Claim 14 is clearly distinguishable from the teachings of Scott '373. First, as discussed above with respect to claim 8, claim 14 recites a "colored noise-like preamble" which is nowhere taught by Scott '373. Moreover, Scott '373 does not teach, disclose or suggest combining at least two antenna output signals by a signal processor connected to the receiver, as recited in claim 14. Instead, the Scott reference teaches "antenna diversity" antennas in which the preamble code may be used for allowing selection of one from a plurality of antennas that has the highest quality data.

As with claim 1, in formulating the rejection of claim 14, the Examiner stated simply that "Scott teaches a communications system (Fig. 1) where a transmitter sends a preamble 901 (Fig. 9) to a receiver, the transmitter *considered capable of transmitting a colored noise-like preamble.*" See Office Action, page 3, section 9 (emphasis added). This assumption is completely unsupported by the reference. Absent *some* showing that the

Scott '373 device could produce such a preamble, the reference cannot support a *prima facie* case of anticipation of claim 14.

Claim 14 also recites that the signal processor is connected to a receiver with at least two antennas, and combines output signals from the antennas. In formulating the rejection, the Examiner argued that Scott '373 teaches a receiver that "receives the preamble and is disclosed as performing diversity combining, where a function of the transmitted preamble code is used to allow multiple antenna paths for use by a demodulator." *See, id.*

In support of this position, the Examiner cited a passage of Scott '373 that reads:

The FIG. 63A chart is constructed according to a PFA ratio of 0.1% (i.e., 10.sup.-3), while the FIG. 63B chart is constructed according to a PFA ratio of 1% (i.e., 10.sup.-2). The FIG. 63A graph shows only about a 1.2 to 2 dB difference between the 4-way or 2-way partitioning detection method as compared with the 1-way partitioning method. The FIG. 63B graph shows similar results. Given that the 1-way partitioning with a two-stage mismatched filter correlator has about a 1 dB processing gain loss due to the mismatched filter, performance is about comparable for the two-stage mismatched filter correlator and the alert/confirm preamble code detector. In either case, preamble sensitivities are well-matched to expected data waveform sensitivity of about -105.7 dBm in an unfaded environment. Accounting for the possibility that the alert/confirm preamble code detector using 4-way partitioning may have lower CFAR losses, it may in some cases outperform the two-stage mismatched filter correlator. As a further consideration, the alert/confirm preamble code detector is generally easier to implement than the two-stage mismatched filter correlator because the subcode matched filter of the former is significantly smaller than the two filter stages (mismatched and matched) in the two-stage mismatched filter correlator. Scott '373, column 48, lines 42-64.

Applicants respectfully submit that the passage bears no relevance whatsoever to the function of the claimed processor in combining signals received by two antennas, particular in response to colored noise-like preamble signals. The Examiner provided no correlation whatsoever between the passage and the recited subject matter. If the Examiner intends to

maintain the rejection, Applicants invite the Examiner to substantiate how the passage, or any portion of Scott '373 relates to the recited subject matter.

Moreover, even if what the Examiner set forth is true, Applicants see no bearing to the recited subject matter regarding combination of the antenna signals. The reference does not appear to combine signals in the manner set forth in the present application, and as recited in claim 14. In particular, as set forth in column 8, lines 16-20 of Scott '373:

The invention may be used, as explained hereinafter, in conjunction with antenna diversity techniques. For example, a preamble code such as described herein may be used to sound a channel and allow selection of one from a plurality of antennas for the message following the preamble code.

Furthermore, Scott '373 specifically teaches the "antenna diversity" referred to by the Examiner as being a technique in which multiple antennas are used in parallel, not in combination. According to the reference:

In more dense urban areas and other areas with significant multipath problems, the number of directional antennas used by a base station 104 is preferably increased to provide antenna diversity as a means of combatting signal degradations from multipath propagation. Scott '373, column 8, lines 53-57.

Thus, Scott does not teach combining at least two antenna output signals by a signal processor connected to the receiver.

Because Scott '373 fails to teach, disclose or suggest a colored noise-like preamble or combining at least two antenna output signals by a signal processor, the reference cannot support a *prima facie* case of obviousness of claim 14 or its dependent claims. Thus, it is respectfully requested that the rejection of claim 14 and its dependent claims under 35 U.S.C. §102(b) be withdrawn.

aRejections Under 35 U.S.C. § 103

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Scott (U.S. Patent 5,959,980) in view of Bunch et al. (U.S. Patent 4,121,216). Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Scott (U.S. Patent 5,959,980) in view of Keen (U.S. Patent 4,388,723). Claims 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Scott (U.S. Patent 6,141,373) in view of Scott (U.S. Patent 5,959,980).

The claims rejected under this section all depend directly or indirectly from independent claims 8 and 14 discussed above. Consequently, all of the dependent claims are believed to be patentable both by virtue of their dependency from an allowable base claim, as well as for the subject matter they separately recite. Reconsideration and allowance of all of the dependent claims on this basis are requested.

New claims

New claims 19 and 20 have been added by this response. Claim 19 is independent, and recites subject matter similar to that of claim 8, adding however that the processor causes reorientation of at least one antenna pattern based upon the preamble strength. This feature of the invention is described, for example, on pages 7-10 of the application for the different embodiments disclosed. No new matter is added. Claim 20 is similar in recitations to claim 9 and, here again, no new matter has been added by the amendment. The new claims are believed to be clearly patentable over the Scott references for at least the reasons set forth above.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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